CLAIMS

What is claimed is:

1. A method for implementing smart DSL for LDSL systems, the method comprising:
presenting a number of spectral masks that are available on the LDSL system; and
selecting from the number of spectral masks an upstream mask and a downstream mask wherein the upstream mask and the downstream mask exhibit complimentary features.

2. The method of claim 1 wherein selecting the upstream mask and the downstream mask is performed during a modem start up period.

3. The method of claim 1 wherein selecting the upstream mask and the downstream mask is performed manually.

4. The method of claim 1 wherein selecting the upstream mask and the downstream mask is performed automatically.

5. The method of claim 1 wherein the number of spectral masks further comprises a number of upstream masks (U1, U2, U3, …, Un) and a number of downstream masks (D1, D2, D3, …, Dn).

6. The method of claim 5 wherein one of the number of upstream masks is defined by the following relations, wherein $f$ is a frequency band in kHz and U1 is the value of the mask in dBm/Hz:
for $0 < f \leq 4$, then $U1 = -97.5$, with max power in the in 0-4 kHz band of +15 dBm;

for $4 < f \leq 25.875$, then $U1 = -92.5 + 23.43 \times \log_2(f/4)$;

for $25.875 < f \leq 60.375$, then $U1 = -29.0$;

for $60.375 < f \leq 90.5$, then $U1 = -34.5 - 95 \times \log_2(f/60.375)$;

for $90.5 < f \leq 1221$, then $U1 = -90$;

for $1221 < f \leq 1630$, then $U1 = -99.5$ peak, with max power in the $[f, f + 1$ MHz$]$ window of $(-90 - 48 \times \log_2(f/1221) + 60)$ dBm; and

for $1630 < f \leq 11040$, then $U1 = -99.5$ peak, with max power in the $[f, f + 1$ MHz$]$ window of $-50$ dBm.

7. The method of claim 5 wherein one of the number of downstream masks is defined by the following relations, wherein $f$ is a frequency band in kHz and D1 is the value of the mask in dBm/Hz:

for $0 < f \leq 4$, then $D1 = -97.5$, with max power in the in 0-4 kHz band of +15 dBrn;

for $4 < f \leq 25.875$, then $D1 = -92.5 + 20.79 \times \log_2(f/4)$;

for $25.875 < f \leq 81$, then $D1 = -36.5$;

for $81 < f \leq 92.1$, then $D1 = -36.5 - 70 \times \log_2(f/81)$;

for $92.1 < f \leq 121.4$, then $D1 = -49.5$;

for $121.4 < f \leq 138$, then $D1 = -49.5 + 70 \times \log_2(f/121.4)$;

for $138 < f \leq 353.625$, then $D1 = -36.5 + 0.0139 \times (f - 138)$;

for $353.625 < f \leq 569.25$, then $D1 = -33.5$;

for $569.25 < f \leq 1622.5$, then $D1 = -33.5 - 36 \times \log_2(f/569.25)$;

for $1622.5 < f \leq 3093$, then $D1 = -90$;

for $3093 < f \leq 4545$, then $D1 = -90$ peak, with maximum power in the $[f, f+1$ MHz$]$ window of $(-36.5 - 36 \times \log_2(f/1104) + 60)$dBm; and

for $4545 < f \leq 11040$, then $D1 = -90$ peak, with maximum power in the [f, f+1 MHz] window of $-50$ dBm.

8. The method of claim 5 wherein one of the number of upstream masks is defined by the following relations, wherein $f$ is a frequency band in kHz and U2 is the value of the mask in dBm/Hz:

for $0 < f \leq 4$, then U2 = –97.5, with max power in the in 0-4 kHz band of +15 dBrn;

for $4 < f \leq 25.875$, then $U2 = -92.5 - 22.5 \times \log_2(f/4)$;

for $25.875 < f \leq 86.25$, then U2 = –30.9;

for $86.25 < f \leq 138.6$, then $U2 = -34.5 - 95 \times \log_2(f/86.25)$;

for $138.6 < f \leq 1221$, then U2 = –99.5;

for $1221 < f \leq 1630$, then U2 = –99.5 peak, with max power in the $[f, f + 1$ MHz$]$ window of $(-90 - 48 \times \log_2(f/1221) + 60)$ dBm; and

for $1630 < f \leq 11040$, then U2 = –99.5 peak, with max power in the $[f, f + 1$ MHz$]$ window of –50 dBm.

9. The method of claim 5 wherein one of the number of downstream masks is defined by the following peak values, wherein $f$ is a frequency in kHz and D2 is the peak value of the mask in dBm/Hz:

for $f = 0.0$, then D2 = -98.0;

for $f = 3.99$, then D2 = -98.00;

for $f = 4.0$, then D2 = -92.5;

for $f = 80.0$, then D2 = -72.5;

for $f = 120.74$, then D2 = -47.50;

for $f = 120.75$, then D2 = -37.80;

for $f = 138.0$, then D2 = -36.8;

for $f = 276.0$, then D2 = -33.5;

for $f = 677.0625$, then D2 = -33.5;

for $f = 956.0$, then D2 = -62.0;

for $f = 1800.0$, then D2 = -62.0;

for $f = 2290.0$, then D2 = -90.0;

for $f = 3093.0$, then D2 = -90.0;

for $f = 4545.0$, then D2 = -110.0; and

for $f = 12000.0$, then D2 = -110.0.

10. The method of claim 5 wherein one of the number of upstream masks is defined by the following peak values, wherein $f$ is a frequency in kHz and U3 is the peak value of the mask in dBm/Hz:

for $f = 0$, then U3 = -101.5;

for $f = 4$, then U3 = -101.5;

for $f = 4$, then U3 = -96;

for $f = 25.875$, then U3 = -36.30;

for $f = 103.5$, then U3 = -36.30;

for $f = 164.1$, then U3 = -99.5;

for $f = 1221$, then U3 = -99.5;

for $f = 1630$, then U3 = -113.5; and

for $f = 12000$, then U3 = -113.5.

11. The method of claim 5 wherein one of the number of downstream masks is defined by the following peak values, wherein $f$ is a frequency in kHz and D3 is the peak value of the mask in dBm/Hz:

for $f = 0$, then D3 = -101.5;

for $f = 4$, then D3 = -101.5;

for $f = 4$, then D3 = -96;

for $f = 80$, then D3 = -76;

for $f = 138$, then D3 = -47.5;

for $f = 138$, then D3 = -40;

for $f = 276$, then D3 = -37;

for $f = 552$, then D3 = -37;

for $f = 956$, then D3 = -65.5;

for $f = 1800$, then D3 = -65.5;

for $f = 2290$, then D3 = -93.5;

for $f = 3093$, then D3 = -93.5;

for $f = 4545$, then D3 = -113.5; and

for $f = 12000$, then D3 = -113.5.